

**Some data to the Oribatid Fauna of Rwanda (Acari: Oribatida)**  
(New and interesting mites from the Geneva Museum LXII.)

Sándor MAHUNKA

Zoological Department, Hungarian Natural History Museum, Baross utca 13, H-1088  
Budapest, Hungary.

**Some data to the Oribatid Fauna of Rwanda (Acari: Oribatida).** – Fifteen Oribatid species are discussed, originating from the territory of Rwanda, all extracted from soil samples. The description of 6 species and that of a new genus: *Mirogalumna* gen. n. (*Galumnidae*) is given.

**Key-words:** Acari – Oribatida – Taxonomy – new species – Rwanda

INTRODUCTION

While staying in Rwanda Dr. Ph. Werner sifted and extracted samples by using the Moczarsky-Winkler bags on the request of Dr. C. Besuchet and Dr. B. Hauser. The material included a large number of Oribatid mites too, of which a part has been identified and is published hereunder. I should like to thank Dr. B. Hauser for allowing me to study this interesting material.

This material is of particular importance, since so far we had a very small number of samples only, and from some regions none at all. The short list of species suggests that the fauna prevailing here indicates relationship with the rainforest fauna of Congo and Angola.

Measurements given correspond to extremes observed in the present material; length is measured from the rostral apex to the furthestmost opposite point of the body. The pilosity of the parts of the body and of the legs are expressed in formulae. The sequence of the anogenital formula is: number of genital, aggenital, anal and adanal setae. Within the setal formula of the palp and legs, the solenidia of a given segment are marked with the symbol +. This study is in part supported by the Hungarian Research Project OTKA 3165.

## List of localities:

Rw-76/1 = Rwanda: Rangiro, tamisage en forêt, sol ocre, 20.VIII.1976. leg. Ph. Werner.

Rw-76/2 = Rwanda: Rangiro, tamisage en forêt, 26.VIII.1976. leg. Ph. Werner.

Rw-76/3 = Rwanda: Rangiro, tamisage en forêt, près d'un ruisseau. 4.II.1976. leg. Ph. Werner.

Rw-76/4 = Rwanda: Rangiro, tamisage en forêt, sommet de colline, 14.IX.1976. leg. Ph. Werner.

Rw-76/5 = Rwanda: Rangiro, tamisage en forêt, zone défrichée, 20.IX.1976. leg. Ph. Werner.

## IDENTIFIED SPECIES:

## PHTHIRACARIDAE Perty, 1841

*Archiphthiracarus minutissimus* Balogh et Mahunka, 1980

Locality: Rw-76/1: 1 specimen.

*Rhacaplacarus laterospinosus* sp. n.

Localities: Rw-76/1; Rw-76/4.

*Hoplophorella pustulata* sp. n.

Locality: Rw-76/2.

*Steganacarus complicatus* sp. n.

Locality: Rw-76/1.

*Steganacarus weneri* sp. n.

Localities: Rw-76/1; Rw-76/2; Rw-76/3; Rw-76/4.

## EPILOHMANNIIDAE Oudemans, 1923

*Epilohmannia ornata* sp. n.

Localities: Rw-76/1; Rw-76/3; Rw-76/4.

*Epilohmannia pallida* Wallwork, 1963

Locality: Rw-76/5: 1 specimen.

## ORIBOTHRITIIDAE Grandjean, 1954

*Indotritia septentrionalis* Mahunka, 1986

Locality: Rw-76/3: 5 specimens.

*Rhysotritia ardua* C.L. Koch, 1841

Locality: Rw-76/5: 12 specimens.

## CAMISIIDAE Oudemans, 1900

*Heminothrus leleupi* Balogh, 1958

Locality: Rw-76/4: 3 specimens.

## MALACONOTHRIDAE Berlese, 1916

*Malacnothrus cordisetus* sp. n.

Localities: Rw-76/1; Rw-76/3.

## NANHERMANNIIDAE Sellnick, 1928

*Nanhermannia quadridentata* Balogh, 1958

Locality: Rw-76/4: 2 specimens.

## LIACARIDAE Sellnick, 1928

*Liacarus celisi* Balogh, 1958

Locality: Rw-76/3: 2 specimens.

## SUCTOBELEBIDAE Grandjean, 1954

*Rhynchoppia capillata* (Balogh, 1963)

Locality: Rw-76/4: 1 specimen.

## GALUMNIDAE Jacot, 1925

*Mirogalumna xena* gen. n., sp. n.

Localities: Rw-76/1; Rw-76/2.

## DESCRIPTIONS

**Rhacaplacarus laterospinosus** sp. n.

**M e a s u r e m e n t s :** Length of aspis: 266-370  $\mu\text{m}$ , length of notogaster: 486-776  $\mu\text{m}$ , height of notogaster: 311-567  $\mu\text{m}$ .

**A s p i s :** A well projecting median crista present. Rostral part of aspis and a part along the carina foveolate (Fig. 6), other surface smooth or basally with longitudinal rugae. Lateral carina strong, well observable, slightly waved. Rostral setae spiniform, smooth. Interlamellar setae strong, bacilliform; spinose and/or spiculate, but only on their anterior surface. Lamellar setae thinner, but also long (Fig. 1). Sensillus (Fig. 5) slightly lanceolate, its surface roughened. Exobothridial setae reduced, only their alveoli visible.

**N o t o g a s t e r :** Ornamented by fine sculpture consisting of polygonate areae, which compose foveolae (Fig. 4). All notogastral setae bacilliform (Fig. 3), characteristically spinose and spiculate on their one side. Very great difference among their length,  $c_3$ ,  $h_3$  and  $ps_4$  the shortest,  $h_1$  and  $ps_1$  the longest. Lyrifissure *im* and *ips* also present.

**A n o g e n i t a l r e g i o n :** Surface of genital and anogenital plates also foveolate. Among the anoadanal setae  $ad_2$  very long, nearly three times longer than  $ad_3$ , and two and half times longer than  $ad_1$ ,  $an_1$  and  $an_2$  (Fig. 2).

**Material examined:** Holotype: Rw-76/1; 8 paratypes: from the same sample, 6 paratypes: Rw-76/4. Holotype and 9 paratypes: MHNG<sup>1</sup>, and 5 paratypes (1149-PO-85): HNHM<sup>2</sup>.

**Remarks:** The new species is well characterised by the long lamellar setae and the characteristic spinulose surface on the notogastral and interlamellar setae. On this ground it belongs to the relationship of *Rhacaplacarus inflatus* (Niedbala, 1984) and *R. amoena* (Niedbala, 1983); however, they are well distinguishing from the new species by their sensillus and the ratio among the notogastral setae.

### **Hoplophorella pustulata** sp. n.

**Measurements:** Length of aspis: 300-345  $\mu\text{m}$ , length of notogaster: 664-786  $\mu\text{m}$ , height of notogaster: 356-494  $\mu\text{m}$ .

**Aspis:** A well developed median crista present, therefore the outline of aspis angular from lateral view. Lateral carina present but not reaching to the lateral margin. Dorsal surface smooth, lateral surface between the carina and the margin ornamented by fine polygonate sculpture (Fig. 10). Rostral, lamellar and interlamellar setae minute (Fig. 9), exobothridial setae reduced. Sensillus (Fig. 8) sword shaped.

**Notogaster:** Anterior part reaching over the basal part of aspis (Fig. 7), its anterior and inner margin pustulate. Fifteen pairs of minute, filiform notogastral setae present, setae  $c_3$  arising nearer to the notogastral margin than  $c_1$ . Lyrifissure *ip* and *ips* not observable.

**Anogenital region:** All five pairs of setae of anoadanal plates short, nearly equal in length; setae  $ad_3$  originates near to the other ones (Fig. 11). Setae  $ad_1$ ,  $an_1$  and  $an_2$  straight,  $ad_2$  and  $ad_3$  slightly curved.

**Material examined:** Holotype: Rw-76/2; 6 paratypes: from the same sample. Holotype and 4 paratypes: MHNG and 2 paratypes (1150-PO-85): HNHM.

**Remarks:** The new species is well characterised by the forward extended and pustulate notogastral margin. On this ground it is well separated from all related species.

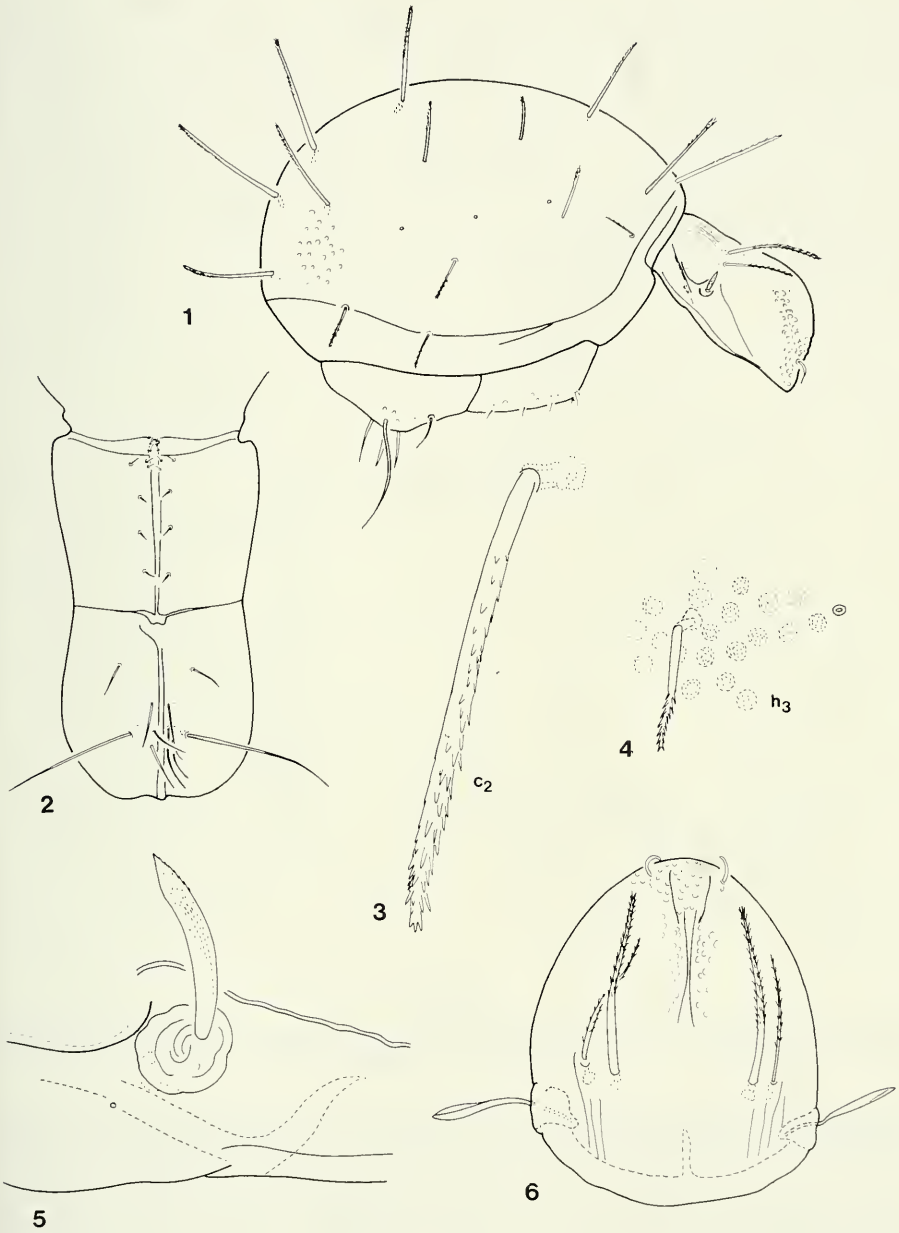
### **Stegnacarus complicatus** sp. n.

**Measurements:** Length of aspis: 379-420  $\mu\text{m}$ , length of notogaster: 746-810  $\mu\text{m}$ , height of notogaster: 526-567  $\mu\text{m}$ .

**Aspis:** Its dorsal margin from lateral view weakly concave medially. Lateral margin short, lateral carinae also weak and short. Its surface scarcely ornamented, some weak ribs basally and some foveolae dorsally observable. Rostral setae straight, erect, its end

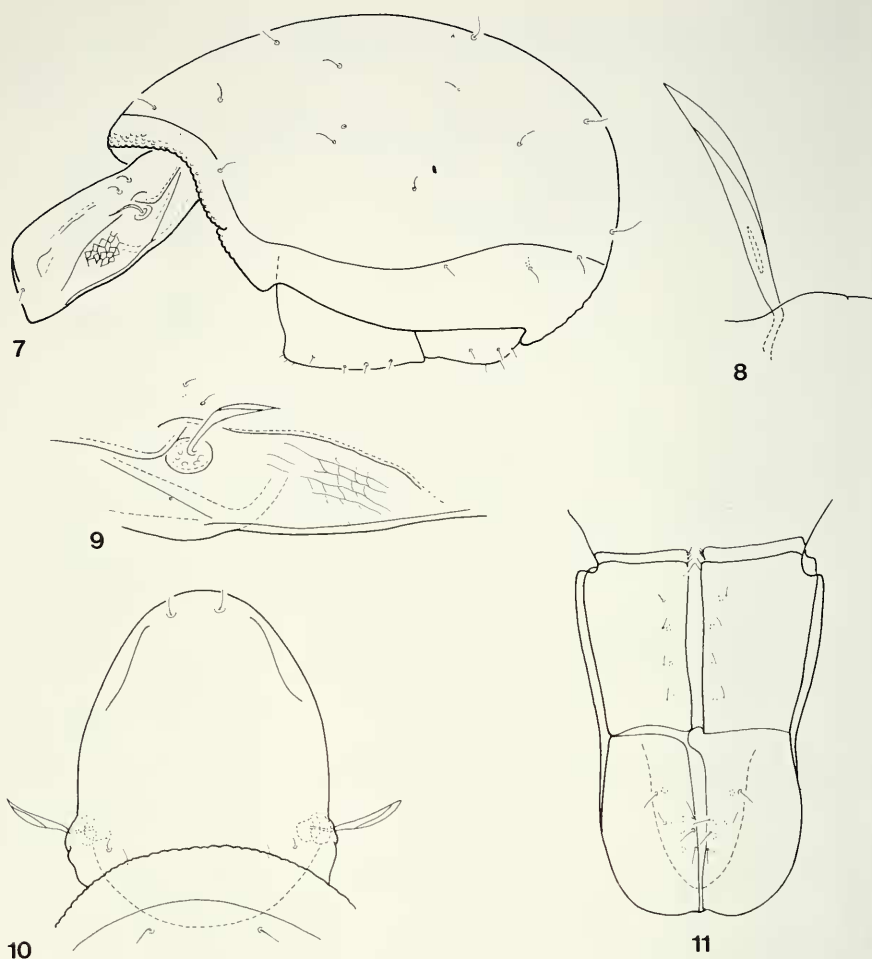
<sup>1</sup> MHNG = deposited in the Muséum d'Histoire naturelle, Genève.

<sup>2</sup> HNHM = deposited in the Hungarian Natural History Museum, Budapest, with identification number of the specimens in the Collection of Arachnida.



FIGS 1-6.

*Rhacaplacarus laterospinosus* sp. n. — 1: body from lateral view; 2: anogenital region; 3: seta  $c_2$ ; 4: sculpture of notogaster and seta  $h_3$ ; 5: sensillus and laterobasal part of aspis; 6: aspis.



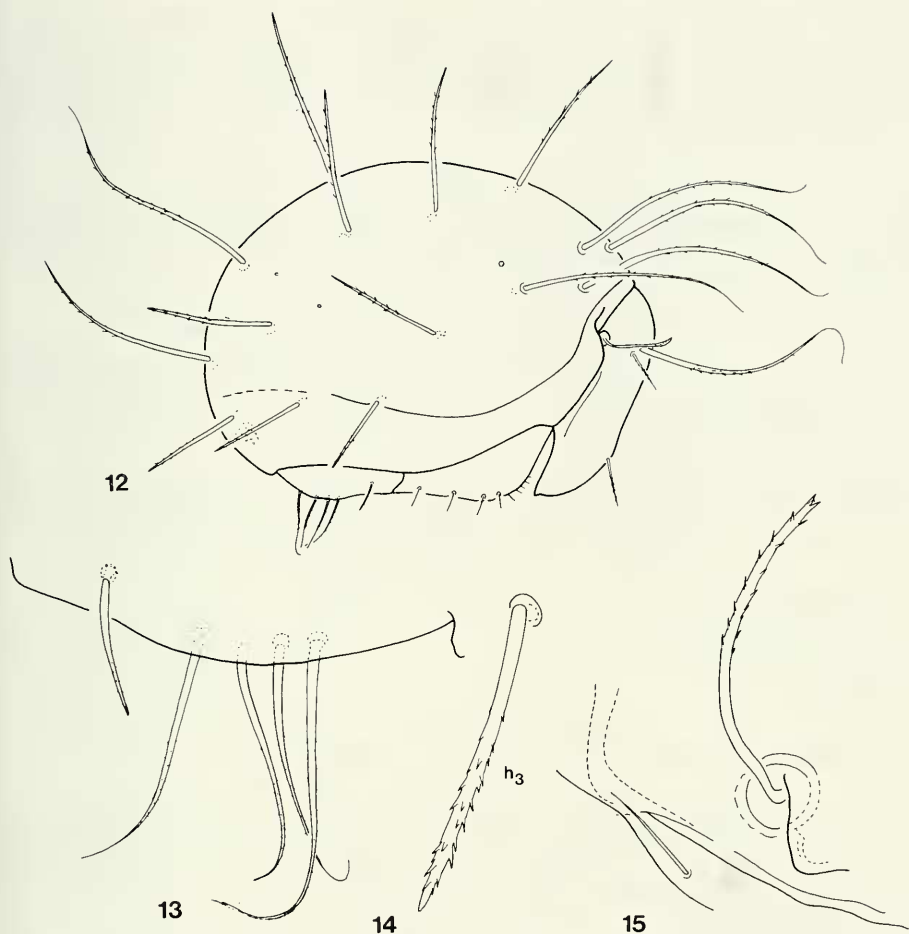
FIGS 7-11.

*Hoplophorella pustulata* sp. n. — 7: body from lateral view; 8: sensillus; 9: lateral part of aspis; 10: aspis; 11: anogenital region.

spiniform. Interlamellar setae very long (420  $\mu\text{m}$ ), its end filiform. Lamellar setae nearly as long as the rostral ones, or slightly shorter. Sensillus (Fig. 15) bacilliform.

**Notogaster:** Surface ornamented by weak foveolae. Notogastral setae (Fig. 14) well varying, end of setae  $c_1$ ,  $c_2$ ,  $c_3$ ,  $cp$  and  $h_1$  filiform,  $e_1$  and  $ps_1$  setiform, all other spiniform (Fig. 12). All setae well spiculate, sometimes spinose. Among all filiform setae the longest:  $h_1$ , ratio of the others:  $ps_3 = ps_4 < ps_2 = h_3 < d_2 < h_2 < e_2 < ps_1 = e_1$ .

**Anogenital region:** Among the anoadanal setae four pairs originate on the inner margin of anoadanal plates, all filiform. Setae  $ad_3$  much shorter and spiniform (Fig. 13).



FIGS 12-15.

*Steganacarus complicatus* sp. n. — 12: body from lateral view; 13: anoadanal setae; 14: seta  $h_3$ ; 15: sensillus and laterobasal part of aspis.

**Material examined:** Holotype: Rw-76/1; 2 paratypes from the same sample. Holotype and 1 paratype: MHNG and 1 paratype (1151-PO-85): HNHM.

**Remarks:** The differential diagnose will be given after the next species.

***Steganacarus wernerii* sp. n.**

**Measurements:** Length of aspis: 340-422  $\mu\text{m}$ , length of notogaster: 640-810  $\mu\text{m}$ , height of notogaster: 445-567  $\mu\text{m}$ .



**A s p i s :** Median surface of prodorsum not concave, nearly straight or weakly convex. Ornamentation of its sculpture like in the preceding species. Rostral setae very strong, characteristically bent forwards, much longer than the lamellar setae. Distal end of all prodorsal setae spiniform, interlamellar setae very long (260  $\mu\text{m}$ ), erect. Sensillus (Fig. 17) setiform.

**N o t o g a s t e r :** Ornamentation of notogaster hardly observable, best visible on the posterior end of body. All notogastral setae with spiniform distal end (Fig. 18). Surface of setae never spinulose or spiculate, only squamose or roughened. Ratio of notogastral setae:  $ps_4 < ps_3 < ps_2 < h_3 = ps_1$ . All other nearly equal in length (Fig. 16).

**A n o g e n i t a l r e g i o n :** Like in the preceding species (Fig. 19).

**M a t e r i a l e x a m i n e d :** Holotype: Rw-76/2; 2 paratypes: from the same sample; 3 paratypes: Rw-76/1; 2 paratypes: Rw-76/3; 2 paratypes: Rw-76/4. Holotype and 6 paratypes: MHNG and 3 paratypes (1152-PO-85): HNHM.

**R e m a r k s :** The new species belongs together with the preceding one to the *peracutus* group, which is characterised by the very long and erect interlamellar setae and the long, filiform anoadanal setae. This group<sup>3</sup> consists of the following species:

*complicatus* sp. n.

*peracutus* (Mahunka, 1983)<sup>4</sup>

*vestitus* Niedbafa, 1983

*wernerii* sp. n.

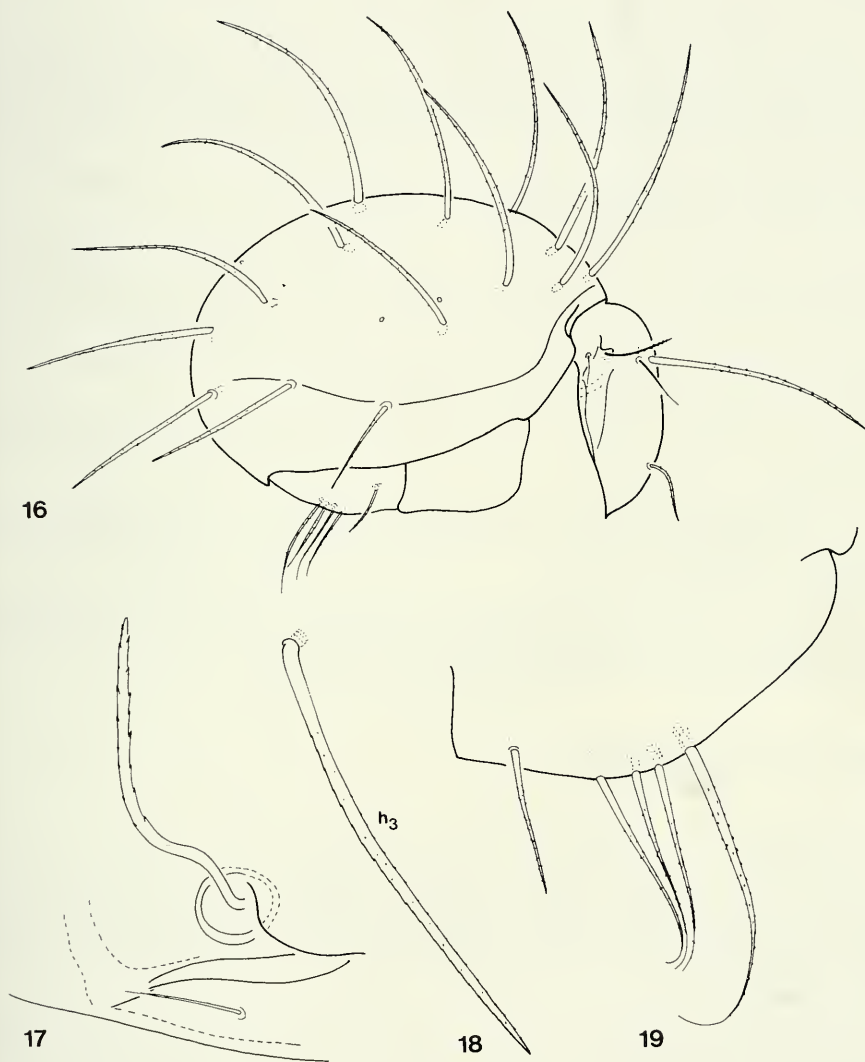
These species may be distinguished by the following key:

- 1 (2) The end of all setae spiniform. Setae  $h_3$  and  $e_2$  not essentially shorter than setae  $ps_1$  ..... *wernerii* sp. n.
- 2 (1) The end of setae partly filiform, sometimes flagellate. At least setae  $h_3$  much shorter than  $ps_1$ .
- 3 (4) Setae  $ps_2$  very short, shorter than  $h_3$  or  $e_2$ . Setae  $h_2$  much shorter than  $ps_1$  ..... *complicatus* sp. n.
- 4 (3) Setae  $ps_2$  much longer than  $h_3$ . Setae  $h_2$  nearly as long as setae  $ps_1$ .
- 5 (6) End of interlamellar setae flagellate. Setae  $d_1$ ,  $d_2$ ,  $e_2$ ,  $h_4$ ,  $ps_3$  and  $ps_4$  short, nearly equal in length ..... *vestitus* Niedbafa, 1983
- 6 (5) End of interlamellar setae spiniform. Setae  $d_1$ ,  $d_2$  and  $e_2$  much longer than  $h_4$ ,  $ps_3$  and  $ps_4$  ..... *peracutus* (Mahunka, 1983)

<sup>3</sup> Formerly I placed on the ground of the erected interlamellar setae also in this group the species *Hoplophorella aokii* Mahunka, 1983 and *H. marginatus* Mahunka, 1984 together with *H. peracutus* Mahunka, 1983. If we accept Niedbafa's opinion, we must divide the hedgehog-like species in two groups: *H. aokii* and *H. marginatus* belong to the genus *Hoplophthiracarus*, all other in the genus *Steganacarus*.

<sup>4</sup> *Hoplophthiracarus peracutus* Mahunka, 1983 = *Steganacarus peracutus* (Mahunka, 1983) comb. nov.





FIGS 16-19.

*Steganacarus wernerii* sp. n. — 16: body from lateral view; 17: sensillus and laterobasal part of aspis; 18: seta  $h_3$ ; 19: anoadanal setae.

***Epilohmannia ornata* sp. n.**

**Measurements:** Length: 433-472  $\mu\text{m}$ , width: 192-221  $\mu\text{m}$ .

**Prodorsum:** Rostral part of prodorsum with longitudinal striation, between the borhtidia well foveolate, foveolae gradually smaller anteriorly and posteriorly. Rostral setae originating asymmetrically. Interlamellar setae very long, longer than the lamellar setae or sensillus. Sensillus setiform, well ciliate (Fig. 20).

**Notogaster:** All notogastral setae setiform, all ciliate, except setae  $x$ . Setae  $c_1$  shorter than  $ps_1$ , setae  $c_3$  much shorter than  $c_2$  (Fig. 23).

**Coxisternal region:** Mentum rarely punctate, epimeres 1 and 2 foveolate and rugose laterally, this surface coarsely ornamented (Fig. 24). Surface of epimer 3 and 4 with finer sculpture, but well observable foveolae. All setae ciliate (Fig. 21).

**Anogenital region:** Surface only punctate. Anogenital setal formula: 8-3-3-3. Setae  $an_1$  and  $ad_1$  much longer than  $an_3$  respectively  $ad_3$ .

**Legs:** Tibia of leg IV (Fig. 22) with 3 setae. On the tarsus two setae ( $pv'$  and  $s$ ) thick, spiniform.

**Material examined:** Holotype: Rw-76/1; 1 paratype: from the same sample; 3 paratypes: Rw-76/3; 3 paratypes: Rw-76/4; Holotype and 5 paratypes: MHNG and 2 paratypes (1153-PO-85): HNHM.

**Remarks:** The new species belongs to the *flexuosa* group. It is well characterised by the strong sculpture of the epimeral region, and it is well distinguished from all *Epilohmannia* species by the two spiniform setae on tarsus IV.

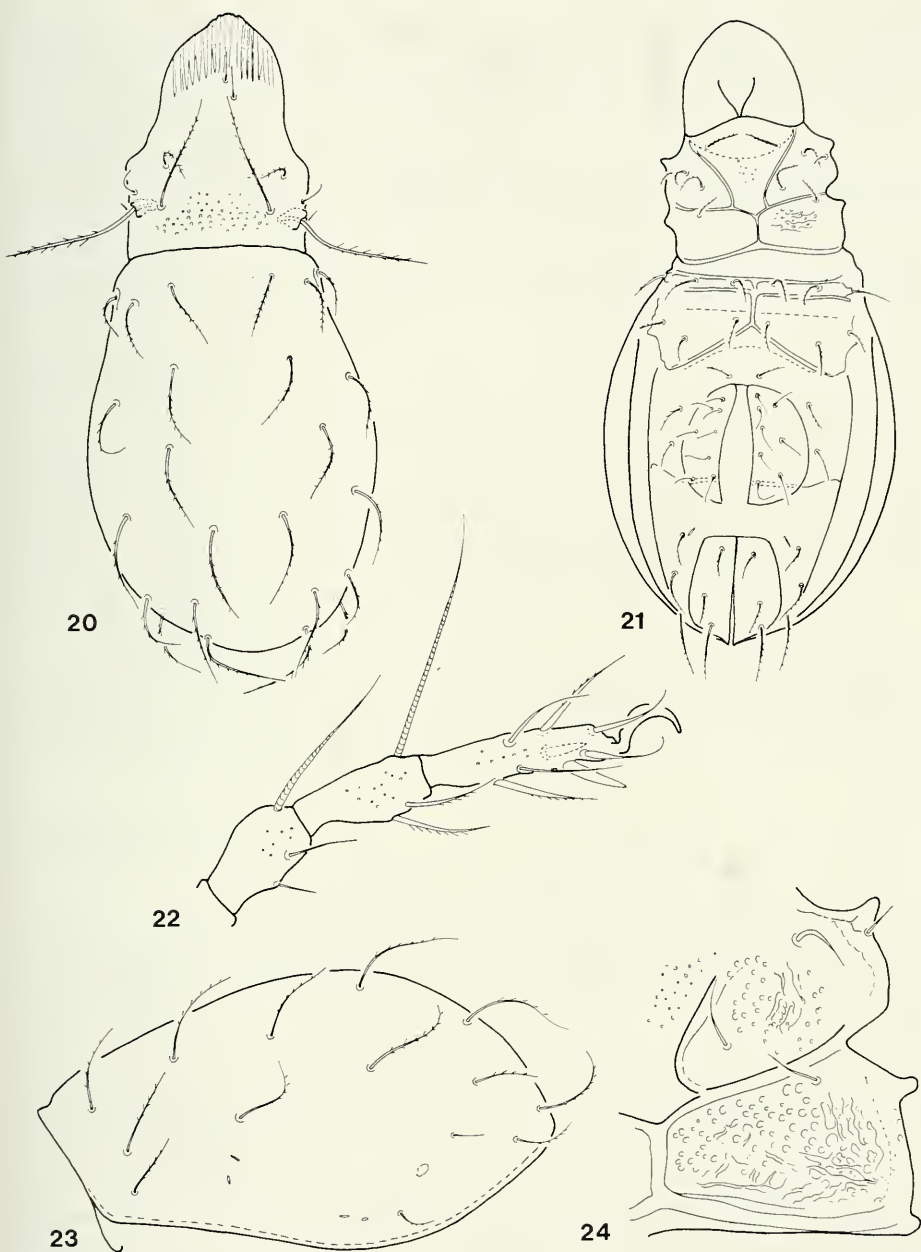
***Malaconothrus cordisetus* sp. n.**

**Measurements:** Length: 428-444  $\mu\text{m}$ , width: 202-210  $\mu\text{m}$ .

**Prodorsum:** Rostrum rounded, prodorsum laterally acutely angled. Rostral setae (Fig. 26) dilated, with very long, thin branches. Lamellae strong, its distal end bent in right angle inwards and the phylliform spiculate lamellar setae arising on their end (Fig. 29). Sensillus and interlamellar setae also phylliform. Interbothridial region ornamented by irregular spots.

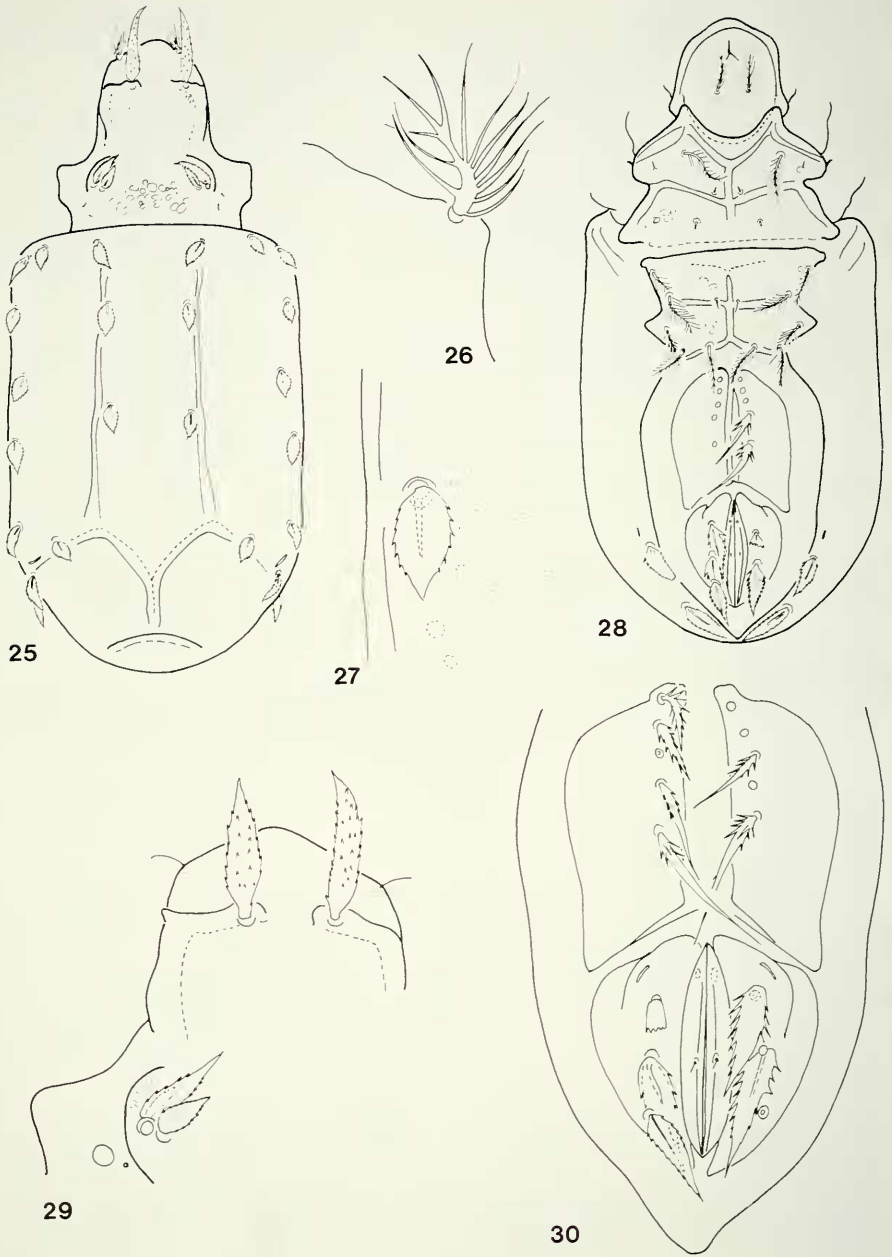
**Notogaster:** The dorsosejugal border of notogaster (Fig. 25), nearly straight, lateral rides are parallel and also straight. Surface with some irregular foveolae. Two longitudinal dorsal ribs strong, two curved posterior weaklier than the former and the unpaired posterior one again strong. All notogastral setae strongly dilate, phylliform or cordiform, their surface spiculate (Fig. 27). Setae  $h_1$  originating far laterally, near to setae  $h_2$  and  $h_3$ .

**Coxisternal region:** Epimeral surface with irregular spots, epimeral setal formula: 3-1-3-3, among them setae  $1a$ ,  $2a$ ,  $3a$  simple, all other long, with very long cilia (Fig. 28).



FIGS 20-24.

*Epilohmannia ornata* sp. n. — 20: dorsal side; 21: ventral side; 22: leg IV; 23: notogaster from lateral view; 24: surface of epimer I and II.



FIGS 25-30.

*Malacothrus cordisetus* sp. n. — 25: dorsal side; 26: rostral seta; 27: notogastral seta; 28: ventral side; 29: prodorsum; 30: anogenital region.

**Anogenital region:** Genital plates concave posteriorly, anal and adanal plates inserted between them (Fig. 30). Anogenital setal formula: 5-0-1-3. Genital setae spinulose basally, anal setae minute, adanal setae phylliform, like the notogastral setae.

**Legs:** Some setae of legs also phylliform, (*dT*, *dG*, *dF* of leg I) or with long branches (*vF* of legs III and IV).

**Material examined:** Holotype: Rw-76/1; 1 paratype: from the same sample; 1 paratype: Rw-76/3. Holotype and 1 paratype: MHNG and 1 paratype (1154-PO-85): HNHM.

**Remarks:** The unique chaetotaxy of prodorsum and notogaster may well distinguish the new species from all related species.

### **Mirogalumna** gen. n.

**Diagnosis:** Family *Galumnidae*. Rostrum with two incisions. Lamellar and sublamellar line present, the latter shorter than the former. Lamellar setae arising near to each other, between line *L*. Dorsosejugal suture complete. Four pairs of area porosae and ten pairs of alveoli present, true setae not developed. Mentum very long, mandibles also long but not peloptoid. Epimeral setal formula: 1-0-2-2. A strong transversal laths behind of the mentotectum. Anogenital setal formula: 6-1-2-3. All legs monodactyle.

**Type species:** *Mirogalumna xena* sp. n.

**Remarks:** The new genus is characterised by the rostral incisure, the shape of the lamellar and sublamellar line, the position of the lamellar setae and first of all by the monodactyle legs. This combination of characters places the new taxon far from all known related taxa.

### **Mirogalumna xena** sp. n.

**Measurements:** Length: 365-385  $\mu\text{m}$ , width: 197-212  $\mu\text{m}$ .

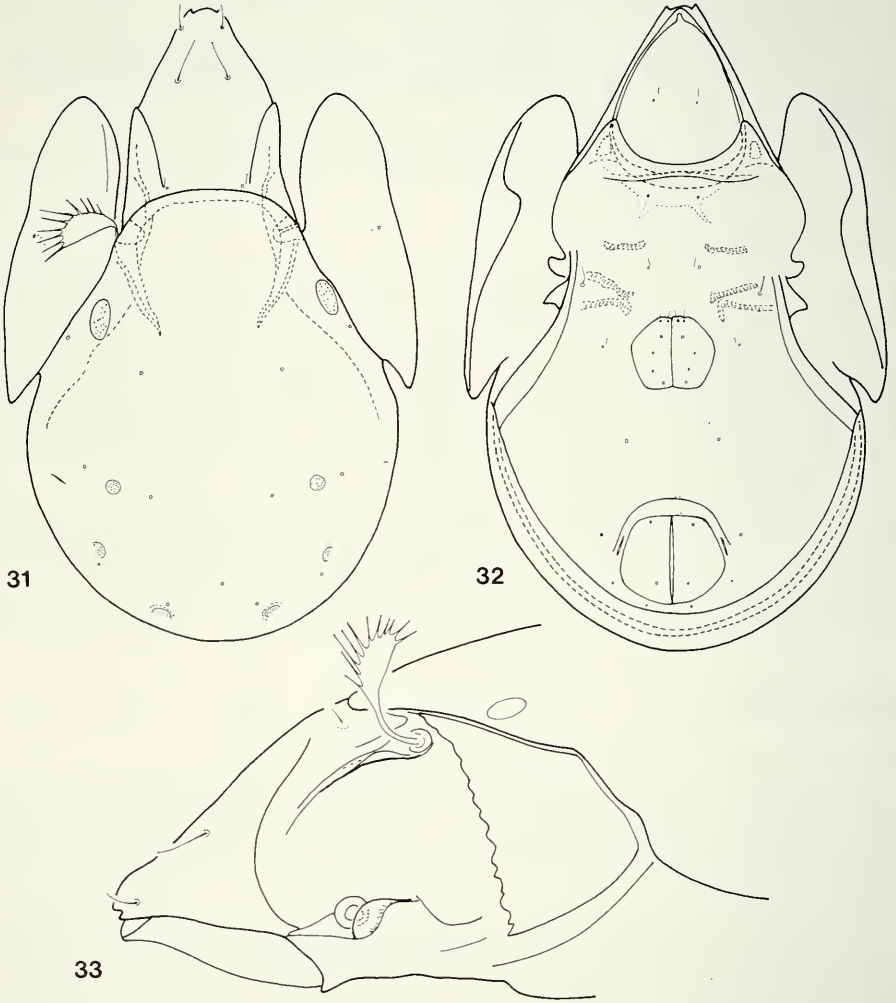
**Prodorsum:** Elongate, gradually narrowed anteriorly. Rostrum truncate. Setae rostrales arising laterally near to the rostrum, setae lamellares originating dorsally, long. Setae interlamellares minute. Sensillus (Fig. 33) laminate, with 10 long branches unilaterally.

**Notogaster:** Dorsosejugal suture nearly straight medially (Fig. 31). No sculpture on the notogastral or pteromorph surface: Four pairs of areae porosae present, *Aa* much larger than the others.

**Coxisternal region:** Mentum large, apiculate. Apodemes weakly developed, *ap. sej.* and *ap. 3* connected with each other. Setae *3b* well visible, all others minute.

**Anogenital region:** All setae minute, setae  $g_5$  and  $g_6$  also very short. Lyrifissure *iad* well visible, long (Fig. 32).

**Material examined:** Holotypus: Rw-76/2; 11 paratypes: from the same sample; 2 paratypes: Rw-76/1. Holotypus and 9 paratypes: MHNG and 4 paratypes (1155-PO-85): HNHM.



FIGS 31-33.

*Mirogalumna xena* gen. n., sp. n. — 31: dorsal side; 32: ventral side; 33 prodorsum from lateral view.



R e m a r k s : The new species does not have any particularly related species among the heretofore known Galumnoidea.

## REFERENCES

- BALOGH, J. 1958. Oribatides nouvelles de l'Afrique tropicale. *Revue Zool. Bot. afr.* 58: 1-34.
- 1960. Oribates (Acari) nouveaux d'Angola et du Congo Belge (2<sup>ème</sup> série). *Publções cult. Co. Diam. Angola* 51: 13-40.
- HAMMER, M. 1961. Investigations on The Oribatid Fauna of the Andes Mountains II. Peru. *Biol. Skr.* 13: 1-157.
- 1968. Investigations on the Oribatid Fauna of New Zealand Part I. *Biol. Skr.* 15: 1-108.
- 1972. Tahiti. Investigation on the Oribatid Fauna of Tahiti, and on some Oribatids found on the Atoll Rangiroa. *Biol. Skr.* 19: 1-65.
- MAHUNKA, S. 1983a. Oribatids from the Eastern Part of the Ethiopian Region. II. *Acta zool. hung.* 29: 151-180.
- 1983b. Oribatids from the Eastern Part of the Ethiopian Region (Acari). III. *Acta zool. hung.* 29: 397-440.
- NIEDBALA, W. 1983. Phthiracaridae nouveaux de l'Ouganda (Acari, Oribatida). *Folia ent. hung.* 44: 109-123.
- WILLMANN, C. 1929. Zwei neue Malaconothridae aus Java. *Zool. Anz.* 83: 89-92.